IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Patent Application of:

LaRoy Tymes et al

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For: PACKET DATA COMMUNICATION SYSTEM

Attorney Docket No.: SYMB:067

CERTIFICATE OF MAILING
37 C.F.R. 1.8

I hereby certify that this correspondence is being deposited with the U.S.Postal Service as First Class Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on the date below:

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Sir:

INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. 1.51(b), 1.56, 1.97 & 1.98

In compliance with the duty of disclosure under 37 C.F.R. 1.56, it is respectfully requested that this Information Disclosure Statement be entered and the references listed on the attached Form PTO-1449 be considered by the Examiner and made of record.

In accordance with 37 C.F.R. 1.97(b), this Information Disclosure Statement is not to be construed as a representation that a search has or has not been made, or that no other possibly material information as defined in 37 C.F.R. 1.56(a) exists.

The comments contained in this Information Disclosure Statement are believed to constitute a concise explanation of the relevance of each listed reference to the invention claimed in the present application. 37 C.F.R. 1.98(a). These comments, however, are not intended to take the place of the Examiner's complete consideration of each reference.

The references cited below include all of the references cited in the file history of application Ser. No. 374,452, filed June 29, 1989 (now U.S. Patent 5,029,183, issued July 2, 1991) of which this application is a continuation-in-part. Further, references cited in the applicant's copending application Ser. No. 630,047, filed December 19, 1990 (also a divisional of Ser. No. 374,452) are cited below. In addition, a counterpart application was filed in the European Patent Office for application Ser. No. 374,452, and references listed in an EPO Search Report for the European application are cited below. It is submitted that these references do not show or suggest the features claimed by the applicant herein, and this citation is merely for the convenience of the Examiner in conducting a search.

The Miffin et al patent 3,641,433 (Reference AA) discloses a transmitted reference synchronizatin system including a communicatins link between a main termianl 1 and a secondary termional 2, using a fixed time delay automatic synchronization. A noise signal is sent from terminal 1 to terminal 2, where it is modulated with the information to be sent, translated to an offset frewquency, and retransmitted to the main terminal. The originally-transmitted noise signal is delayed a selected amount and then correlated with teh incomming signal from transmitter 2.

The Lockart et al patent 4,247,908 (Reference AB) shows a two-way communications system having a host computer 10, a base station 13 and a number of portable units 14-1 to 14-n. As seen in Figure 11, the portable units include a keyboard 114 and a display 122, and may use a light pen 116 "for reading black and white bar code such as Code 39" (col. 7, lines 21-22), although the portable units are mostly for two-way voice communication using microphone 108 and speaker 104. The base station polls the portable units to see if they have a message to send, so the receiver circuitry would have to be powered-up continuously. The protocol places the scheduling of communications under control of the base station and host computer, rather than under control of the portable units.

The Weinberg et al patent 4,291,409 (Reference AC) shows a spread spectrum communications method using a message signal structure as seen in Figure 3A, where the message signal includes a synchronizing word 24, an identifying word 26, and a data word 28. The message is combined with a pseudo-random code sequence so each data bit corresponds to a fixed number of pseudo-random code cycles 32, and each code cycle 32 consists of a number of code chips 36, where each code chip 36 corresponds to a single bit in the pseudo-random code sequence.

The Shepard et al patent 4,409,470 (Reference AD - and the corresponding Shepard patents 4,758,717, 4,736,095, 4,673,805, and 4,460,120, which all disclose the same embodiments, and are all assigned to the assignee of this application) shows in Figures 8 and 9 a hand-held bar code reader employing an RF link to a central computer 70 of Figure 6. A radio transmitter 124, modulator 125 and antenna 116 are used, as described at col. 17, line 12 to col. 18, line 7.

The Ricketts patent 4,475,208 (Reference AE) shows a spread spectrum data communication system in which a digital data signal on input 7 is combined with a pseudo-random code from generator 9 in an exclusive-OR gate 8 to generate a signal for transmission on a communication channel 4 (in this case a wire link), then the data is recovered by using a pseudo-random code generator 21 and an exclusive-OR gate 22 in the receiver.

The Winters patent 4,639,914 (Reference AF) shows a wireless PBX/LAN system having remote terminals 10, 12, 14, or 16 communicating by a single RF channel with a base station 20, using a separate antenna 22, 24 26, or 28 for each remote terminal. Also, a separate receiver 34, 36 38, or 40 is used for each remote terminal. All transmitters in the

remote terminals transmit simultaneously, and all receivers receive simultaneously, and this is under control of the central PBX 42, as illustrated in Fig. 5.

The Kavehrad et al patent 4,672,658 (Reference AG) shows a spread spectrum wireless PBX for voice and data communication having a number of local user transceivers 10_1-10_k each of which has a transmitter 11 and a receiver 12. A central PBX 14 provides interconnections between local users and/or connects local users to an external network. The central PBX has a separate transceiver 15_1-15_k for each one of the local users, and the RF link between the local users and the transceivers 15_1-15_k employs direct sequence spread spectrum RF, with a different chip sequence for each one of the local users so several can operate at one time.

The Sagey et al patent 4,740,792 (Reference AH) shows a vehicle location system using a battery-operated transmitter in each vehicle sending an RF spread spectrum message signal seen in Figure 3. This 100-microsecond message includes a 128-chip sync symbol 122 followed by six 4-bit data symbols 124 and instruction symbols 126 and 128, using a 6.4 MHz chip rate, employing a pseudo-random code. The vehicles have no receiver, however, so there is no communication from a central station to the vehicles.

The Acampora et al patent 4,789,983 (Reference AI) shows a wireless network for wideband indoor communications including a number of user devices (transceivers) 10-19 which communicate with a central node 30 via wire or wireless links, through concentrators 20 and 21. All of the user devices 10-19 are allotted a time for transmitting voice or data under control of a call processor 35 in the central node, using a polling protocol as seen in Fig. 2.

The Waggener, Sr. et al patent 4,829,540 (Reference AJ) discloses a secure communication system for multiple remote units 5a, 5b, 5n. The message format is seen in Figure 2. A base station 1 sends a signnal that assigns a unique time delay for each remote unit, designating the amount of time the remote unit is to wait before responding.

The Zook et al patent 4,850,009 (Reference AK) shows a hand-held terminal 20 having a bar code reader 52 and using an RF link to communicate between the terminal circuitry of Figure 4 and a base station system of Figure 7. There is only one hand-held terminal for a base station. A terminal is said to be able to initiate RF communication to the base station.

The Malcolm et al patent 4,332,027 (Reference AL) discloses a contention-type network using collision detect. Any node in the network as seen in Figures 1A and 1B can transmit to any other, or receive from any other. The EPO Search Report cites as pertinent: Figures 1A-3B; Abstract; col. 3, line 1 to col. 4, line 55. The patent does not disclose a system in which a base station cannot send a message to a remote unless it has received a transmitted packet.

The Toyonaga et al patent 4,689,785 (Reference AM) discloses a data transmission system in which a number of stations A, B, C are connected by a bus line BL. The EPO Search Report identifies Figure 1 and the Abstract as pertinent. Any station may send to any other station, using a carrier sense mechanism 2a, and a transmitter 6a and receiver 4a. The system differs from applicant's in that any station can receive at any time, rather than remote stations only receiving after transmitting, and a base station that cannot initiate transmission to a remote.

The O'Sullivan patent 4,697,281 (Reference AN) discloses a method of transmitting data using a modem and a cellular telephone system. The EPO Search Report identifies as pertinent: Figures 1 and 4; Abstract; col. 12, lines 23-64. The cellular transceivers 12 and 18 are not disclosed to be responsive only in the manner applicant claims, however. Instead, any cellular transceiver can receive from the central station, and can transmit to the central station, at any time.

The Sidhu et al patent 4,689,786 (Reference AO) shows a local area network of the Ethernet type using collision sense, multiple access techniques. A station wanting to send a message to another station employs a "three-step handshake". An "RTS" signal is sent by the sending station, and a "CTS" signal must be returned by the receiving station, then the sending station sends a data frame within a predetermined time after the CTS signal is received, as illustrated in Figure 7. The EPO Search Report identifies as pertinent: Figures 5, 7; Abstract; col. 6, lines 33-52; col. 7, lines 10-16; col. 7, line 64 to col. 8, line 3. The distinction between what Sidhu et al show and the present disclosure is that in Sidhu any station can send a message to any other, and the receiver is activated at all times for the potential receipt of messages. In contrast, the system illustrated herein is concerned with battery life, so the remote stations can receive only after they have initiated an exchange; a base station cannot initiate a message exchange with a remote station.

The Yagi patent 4,933,953 (Reference AP) shows an initial synchronization system for a spread spectrum receiver in which the received signal A is applied to a despreader-demodulator 1 operating under control of a control signal B. A correlation detector also receives the input signal A and looks for correlation, beginning at a time selected by a signal D from a control circuit 4; if a correlation is detected, the signal B is generated so demodulated data is passed decoder 2 by line C. If code synchronization signal G is not sent within selected time, the control circuit restarts the cycle by a signal D.

The Simpson et al patent 4,995,053 (Reference AQ) discloses a system for remote control of devices in a building as seen in Figure 1, where a receiver 40 is provided at each junction box to turn the devices on or off. Transmitters 46 operate in the spread spectrum frequency, 915 MHz, sending a preamble chipping code as seen in Figure 3. In the preamble, the transmitted value changes at half-chip (called "crumb") intervals, and this is recognized in the receiver and used for synchronization.

The Yamamoto patent 5,008,899 (Reference AR), which because of its date is not a reference against the originally-filed application Ser. No. 374,452, discloses a receiver for spread spectrum communication, with means for positively accomplishing synchronism between the receiver and transmitter. A receiver, Figure 1, uses a pseudo-noise (PN) code generator 104 which produces the same PN code as generated in the transmitter, Figure 2.

The Tymes patent 5,029,183 (Reference AS) issued from the parent application 374,452, and contains the same subject matter disclosed herein. This patent is cited only for consideration of double patenting issues.

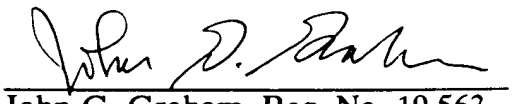
The MSI Data Corporation product brochure (Reference AT) shows a portable radio terminal referred to as an MSI PRT. These hand-held, battery-operated terminals with keyboard and LCD display are coupled to a host computer system by an RF link through base stations; a base station can handle up to eight PRT terminals. A wand or "contact" type bar code scanner, or a laser scanner, may be plugged into the terminal.

The Vectran Corporation product brochures (Reference AU) for VR1100, VR1120, VR1130 and VR1150 radio data terminals show radio data communications equipment for use in a factory environment for linking radio terminals located on fork lift trucks or the like, or hand carried, to a master terminal connected to a host computer. Data entry at the

portable radio terminals is by a keyboard, barcode scanner or serial port, and a display is provided at these portable terminals. Up to 127 remote units share a single UHF channel. The RF bands include 450-512 MHz and 850-960 MHz.

The Freret et al article, NTC 1980 (Reference AV), discloses a wireless data communications system between a central computer and several remote terminals using direct-sequence spread-spectrum techniques. One receiver implementation employs a microprocessor performing code acquisition and tracking using a sequential correlator.

Respectfully submitted,



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